gives a good example of the former class; a ball of the latter"); synectic (B. Williamson in *Encycl. Brit.* vol. 24, 1888, p. 72 "A function of a complex variable which is continuous one-valued, and has a derived function when the variable moves in a certain region of the plane is called by Cauchy Synectic in this region"); syntax; syntheme (Sylvester, 1844, *Coll. Math. Papers*, 1904, vol. 1, p. 91 "Let us agree to denote by the word syntheme any aggregate of combinations in which all the monads of a given system appear once and once only. . . . Let us begin with considering the case of duad synthemes"); synthetic; syntractrix and syntractory (G. Peacock, *Examples Diff. Calc.*, 1820 and G. Salmon, *Higher Plane Curves*, 1852); systatical (Jeake, *Arithmetic*, 1674, p. 662 "Three . . . is called a Systatical or Substantial Number, because all Sublimary Bodies consist of the three principal Substances, Sal, Sulphur, and Mercury") [obsolete]; syzygant; syzygetic and syzygy (Sylvester, *Cambr. and Dublin Math. Journal*, vol. 5, 1850, p. 276 "The members of any group of functions, more than two in number, whose nullity is implied in the relation of double contact, . . . must be in syzygy. Thus, PQ, PQR, QR, must form a syzygy").

It may be remarked that the editors of 'N.E.D.' have overlooked three words used in mathematical literature, namely: symptose, syntypic, and syrrhizoristic. The first two occur in the index to Cayley's *Coll. Math. Papers*, 1898, on p. 135. (The use of the term syntype, in natural history, *is* presented in 'N.E.D.'). Sylvester introduced the word syrrhizoristic (*Philosophical Trans.*, vol. 143, 1853, and *Coll. Math. Papers*, vol. 1, p. 585 "A syrrhizoristic series is a series of disconnected functions which serve to determine the effective intercalations of the real roots of two functions lying between any assigned limits").

While 'N.E.D.' lists several meanings of the word systatic, there is no reference to its use in mathematics. Have this word and asystatic (not in 'N.E.D.') ever been used as mathematical terms in English writings? They are familiar to the Frenchman (*Encyclopédie des sciences mathematique*, tome 2, volume 4, p. 224: "groupes systatiques et asystatiques"), to the German (Lie-Engel, *Transformationsgruppen*, Band 1, Leipzig, 1888, Kapitel 24: "Systatische und asystatische Transformationsgruppen," pp. 497–522), and to the Italian (L. Bianchi, *Lezioni sulla teoria dei gruppi continui*, Pisa, 1918, p. 185: "gruppi sistatici ed asistatici").

The Physical Society of London. *Report on the Theory of Gravitation.* By A. S. EDDINGTON, London, Fleetway Press, 1918. 8vo. 7 + 91 pp. Price, in paper, 6s. 3d.

Quotation from the Preface: "The relativity theory of gravitation in its complete form was published by Einstein in November, 1915. Whether the theory ultimately proves to be correct or not, it claims attention as one of the most beautiful examples of the power of general mathematical reasoning. The nearest parallel to it is found in the applications of the second law of thermo-dynamics, in which remarkable conclusions are deduced from a single principle without any inquiry into the mechanism of the phenomena; similarly, if the principle of equivalence is accepted, it is possible to stride over the difficulties due to ignorance of the nature of gravitation and arrive directly at physical results. Einstein's theory has been successful in explaining the celebrated astronomical discordance of the motion of the perihelion of Mercury, without introducing any arbitrary constant; there is no trace of forced argument about this prediction. It further leads to interesting conclusions with regard to the deflection of light by a gravitational field, and the displacement of spectral lines on the sun, which may be tested by experiment.

"The arrangement of this report is guided by the object of reaching the theory of these crucial phenomena as directly as possible. To make the treatment rather more elementary, use of the principle of least action and Hamiltonian methods has been avoided; and the brief account of these in Chapter VII is merely added for completeness. Similarly, the equations of electrodynamics are not used in the main part of the Report. Owing to the historical tradition, there is an undue tendency to connect the principle of relativity with the electrical theory of light and matter, and it seems well to emphasize its independence. The main difficulty of this subject is that it requires a special mathematical calculus, which, though not difficult to understand, needs time and practice to use with facility. In the older theory of relativity the somewhat forbidding vector products and vector operators constantly appear. Happily this can now be avoided altogether; but in its place we use the absolute differential calculus of Ricci and Levi-Civita."

Contents—I (Pages 1–13): The restricted principle of relativity; II (14–29): The relations of space, time, and force; III (30–40): The theories of tensors; IV (41–47): Einstein's law of gravitation; V (48–58): The crucial phenomena; VI (59–70): The gravitation of a continuous distribution of matter; VII (71–81): The principle of least action; VIII (82–91): The curvature of space and time.

NOTES.

The works of EVANGELISTA TORRICELLI, "edite in occasione del III centenario della nascita col concorso del Comune di Faenza da Gino Loria e Giuseppe Vassura," have been published in three volumes (about 1800 pages, Faenza, G. Montanari, 1919; price 60 lire). There is a valuable "Introduzione" (pages iii–xxxviii of the first volume) by Loria.

Vuibert (Paris) published in 1919 the first volume of a three-volume work by H. BROCARD and T. LEMOYNE entitled: Courbes géométriques rémarquables (courbes spéciales) planes et gauches. The volume contains 460 royal-octavo pages and is listed at 18 francs. It will soon be reviewed in this MONTHLY.

The Hydrographic Office, Washington, has recently published. General Catalogue of Mariner's Charts and Books, corrected to April 1, 1919 (293 pages). In Special Publication no. 60 of the U. S. Coast and Geodetic Survey, Mr. O. S. ADAMS makes A Study of Map Projections in General (24 pages). The author states that

"an attempt has been made to treat in simple form some of the fundamental ideas that underlie the subject of map projections in general. There has been no intention to develop any phase of the subject at any length, but merely to give briefly some suggestions under the different headings that, it is hoped, may be found helpful to those who wish to get an understanding of the subject."

The issue of Nature for November 6, 1919, was a "jubilee number" (84 pages), and contained about forty brief articles concerning progress in various phases of science. Sir Norman Lockyer, the founder of the journal, in November, 1869, wrote "Valedictory Memories," and H. Deslandres, director of the Astrophysical Observatory of Mendon, wrote the sketch of Sir Norman (of whom there is a fine portrait supplement) for the "Scientific Worthies" series. The article on "Science and the Church" is by Canon J. M. Wilson who states that he "was a fair mathematician" fifty years ago (he was a senior wrangler). Readers of Euclid and his Modern Rivals (1879, second edition, 1885) will recall that C. L. Dodgson (Lewis Carroll) and De Morgan found much to criticize in the Canon's